REMARKS

In a FINAL Office action claims 17 and 18 were rejected under 35 USC 101, and claims 1-26 were rejected under 35 USC 102 as being anticipated by Beigi et al, US Patent 6,246,982. In response, applicants amended claim 17, and argued that the rejection of claims 1-26 was not appropriate. The Examiner issued an Advisory Action, asserting with respect to claims 17 and 18 that

> the content-based search is not specific to a particular art even though the outcome is somewhat defined,

and asserting with respect to claims 1-26 that

> Beigi et al in column 5, lines 20-34 shows that the distance between the probability density functions also can be computing using Kullback Leibler Distance with is the same measurement method used by the instant application. The measurement method includes inter-collection distance with a weighted sum of multiple distances (see Beigi et al column 5 lines 35-47); hence the measurement includes distance between each member and all of the other elements with an MN different distance measures.
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> Further, Beigi et al in Figs 4A and 4B, the distance measurement is carried out element by element; i.e., collection 'A' contains M n-dimensional distributions, A_1 through A_M and collection 'B' contains N n-dimensional distributions B_1 through B_M. An array of weighted row minima W_1^A to W_M^A is computed by first calculating the distance from each A, n-dimensional distribution[s] to each B, n-dimensional distributions [s] to form a matrix distances from d11 to dMN. Hence, as noted above, Beigi et al teaches that each A_i or A_n contributes one distance measure to each MN element.

The 101 Rejection

Claim 17 is amended herein. As amended, claim 17 defines a method executed in a computer. The method acquires a collection of data that pertains to a physical attribute of a system, and transforms that acquired data to form an output signal.

It is respectfully submitted that a process that transforms data pertaining to a physical system is clearly statutory and, therefore, claim 17 is statutory, and so is dependent claim 18.

Moreover, claim 17 defines a method for determining whether an acquired collection of data that pertains to a physical system is similar to some other (stored)

collections, and that determination clearly has practical application. Thus, for example, a collection of speech utterances can identify a specific person, a collection of information about a traveler can identify a potential terrorist, a collection of responses to stimuli can identify a particular ailment of a person, etc. In short, amended claims 17 and 18 are believed to be statutory, and their rejection should be withdrawn.

The 102 rejection

Claim 1-26 were rejected under 35 USC 102 in view of Beigi et al, US Patent 6,246,982. The Examiner's remarks in the Advisory action narrow the issue and applicants thank the Examiner for the remarks.

Viewing the Beigi et al description generally, it is unquestionable that at col. 4, lines 26 – 30 the reference states that the "The inter-collection distance is essentially a weighted sum of these closest "inter-distribution" distances. This is clearly different from a weighted sum of all "inter-distribution" distances, which is what applicants' claims define. Further, at col. 4, lines 28-29 Beigi et al state that "the weighting is based on the number of samples," which means that the distance is directly determined by the data or the result of K-Means clustering (see col. 3, line 62). In contradistinction, claim 1 clearly defines the distance to be between mixture type probability distribution functions, and it is NOT a function of the number of data samples.

Viewed with a focus on the Examiner's remarks, it is true that the Beigi et al FIG. 4A shows a matrix of distances d_{ij} and that those distances can be KL distances. Applicants' method also has a matrix of distances d_{ij} and those distances can be KL distances. However, this is where the correspondence between the Beigi et al teachings and applicants' claim 1 ends. The following shows some of the differences between the Beigi et al teachings and applicants' claim 1, and ea*ch one of these differences is sufficient to hold that claim 1 is NOT anticipated by Beigi et al.*

1. Applicants' claim 1 employs weights, $\omega_{i,j}$ $i=1,2,...M; j=1,2,...N$. That is, one weight per element of the matrix, for a total of MN weights. Beigi et al does not have such weights. The closest that Beigi et al come to "weights" are the weighted row factors, W_i^A $i=1,2,...M$, of which there is only one per **row**, and

the weighted column factors, W_j^B $j = 1,2,...N$, of which there is only one per **column** -- for a total of M+N factors. Thus, at least *the number* of the factors (row, column, or their sum) is different from the number of weights employed in applicants' claimed method.

2. The weighted row minimum of a row is equal to the smallest member of the row multiplied by the number of samples. See col. 5, line 64 through col. 6, lines 7. In contradistinction, the weights ω_{ik} are such that

(a) $\omega_{ik} \geq 0$, for $1 \leq i \leq N$, and for $1 \leq k \leq K$,

(b) $\sum_{k=1}^{K} \omega_{ik} = \mu_i$, $1 \leq i \leq N$, and

(c) $\sum_{i=1}^{N} \omega_{ik} = \gamma_k$, $1 \leq k \leq K$,

where $\sum_{i=1}^{N} \mu_i = 1$, and $\sum_{k=1}^{K} \gamma_k = 1$.

Thus, in addition to the fact that the factors are different in number from the number of weights ω_{ik}, their nature and values are totally different from weights ω_{ik}. That is, the W_i^A and W_j^B factors are each a distance multiplied by a number that is much greater than 1 (the number of samples in a row, or in a column) whereas the weights ω_{ik} are related to *distributions* and their values are much smaller (their sum over the variable *i* is equal to a mean distance).

3. The equation for the inter-collection distance in Beigi et al (equation 6) simply adds the row factors and the column factors, and divides the sum by the total number of samples in the A and B distributions. In contradistinction, claim 1 defines the sum as

$$D_M(G,H) = \min_{w=[\omega_{ik}]} \sum_{i=1}^{N} \sum_{k=1}^{K} \omega_{ik} d(g_i, h_k),$$

which, clearly, is quite different from the Beigi et al equation 6.

Considering the above differences, it is respectfully submitted that claim 1 is neither anticipated by nor is obvious in view of Beigi et al.

The same argument applies to all of the other independent claims, and the dependent claims.

In view of the above amendments and remarks, applicants respectfully submit that all of the Examiner's rejections have been overcome. Reconsideration and allowance are respectfully solicited.

Dated: 11/24/04

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